HYDROLOGY

Precipitation

Average annual precipitation for the region which encompasses the Blue River basin is 36 inches (MDNR 1986). Precipitation is greatest during spring and summer especially during the months of May and June. Average annual runoff is about seven inches.

USGS Gaging Stations

The basin has three gaging stations located along Brush Creek and two located along the mainstem of the Blue River. The gaging station most often used to report river conditions is on the downstream side of the Bannister Road bridge at stream mile 23.2 (Reed et al. 1992). This is 0.4 mile downstream from the confluence with Indian Creek. The recording period has been May 1939 to the present.

Permanent/Intermittent Streams

Permanent and intermittent flow in streams fourth order and larger are listed in Table 3. These were calculated using USGS 7.5 minute topographic maps and the Mapwork computer program.

Stream Flow

The average annual discharge at the Bannister Road gaging station (06893500) is 164 cfs (Hauck et al. 1999). The drainage area at this location is 188 square miles which is about 70% of the total basin. The highest annual mean discharge was 437 cfs in 1993. The lowest was 12.8 cfs in 1956.

Due to the configuration of the Blue River basin, dense soils, and urbanization, flooding can occur at anytime of the year. However, flooding occurs most during the spring and early summer (USACOE 1974). Flooding problems are aggravated by the large number of bridges spanning the river which restricts flow. From 1928-1973, the Blue River flooded 23 times (USACOE 1974).

The Blue River is defined as a Phase I navigable stream by the USACOE. This means the stream was "historically navigable". It is listed as having up to four miles of navigable water (MDNR 1986).

Dam and Hydropower Influences

With the recent removal of the Guinotte Dam (river mile 4.1), there are no remaining dams on the Blue River. A large grade control structure will be installed at the upper end of the channel modification project at 59th Street to prevent headcutting upstream. This structure is being designed to allow the migration of fish during normal river flow (Joe Lilley - USACOE, personal communication).

There are several dams located within the Brush Creek modification project which form large permanent pools. There is a waterfall approximately 5-10 feet high on Indian Creek at the Watt's Mill historic site. Other obstructions (e.g. concrete encased pipes) cross basin streams and can inhibit fish migration during low flow periods.

Table 3. Permanent and intermittent flow in major streams in the Blue River basin.

Stream	Miles of Permanent Flow	Miles of Intermittent Flow
Blue River	40.7	0.0
Indian Creek	18.6	4.9
Wolf Creek	9.3	2.0
Coffee Creek	8.3	1.9
Brush Creek	6.4	4.2
Tomahawk Creek	4.8	7.0
Camp Branch	4.2	2.9
Unnamed (KS)	3.5	1.4